

7. RESULTS ON EARNINGS LOSSES AND REPLACEMENT RATES BY INJURY SEVERITY

Over the years, California has developed a complicated formula used nowhere else that attempts to rank the severity of the impact of impairments on workers (categorized by age and occupation) in order to ensure that those with the greatest loss of ability to compete in the labor market receive the largest compensation. In particular, upon reaching “permanent and stationary status” after which no further improvement is expected, a medical report is obtained with information on the impairment and sometimes a doctor’s assessment of the need for work restrictions and of the worker’s injury-associated pain. This information, along with the age and occupation of the worker, are then scaled and weighted to provide a “disability rating” which ranks workers by disability so that the level of benefits can be set to compensate the appropriate fraction of their loss.¹ Many other states take a much more rigid approach to compensating disability, emphasizing objective medical criteria for the determination of impairment, and typically ignoring work restrictions, pain, and pre-injury occupation.²

California’s liberal construction of disability is controversial. On the one hand, if successful, it may lead to greater equity. More workers with a disability (but without associated objective medical conditions) can receive benefits. Among those with a disability, if subjective and non-medical factors are important and correctly scaled by the disability rating, then benefits will be distributed more effectively to those with the greatest losses. On the other hand, a larger fraction of workers receive PPD benefits in California, increasing costs to employers.³ This increase is driven by eligibility criteria that, lacking a means for objective testing, are often disputed. The increase in contested ratings increases litigation and undermines confidence in the system. If the ratings lead to more “noise” than “signal,” it will also undermine equity.

¹ For example, for back injuries, the most common permanent partial disabilities in California, the disability rating gives a measure of a doctor’s assessment of the seriousness of the injury. Therefore, for a 39-year-old claimant, a back injury “precluding very heavy lifting” will receive a rating of 10. If the injury “precludes heavy work” the rating is 30. If the injury results in a “disability resulting in limitation to sedentary work,” the rating received is 70. The loss of a ring finger results in a rating of 6, while the loss of all five fingers on one hand leads to a rating of 55. The loss of hearing in one ear leads to a 15, while deafness receives a rating of 60. Disability ratings below 20 are sometimes referred to as “minor” and ratings above 20 are referred to as “major.”

² See Barth *et al* (1999) for a discussion of permanent partial disability compensation in other states.

³ The fraction of indemnity claims receiving PPD benefits at self-insured employers in California is 44 percent, and 43 percent at insured firms. In contrast, in Wisconsin, 18 percent receive PPD benefits. In

Earnings losses can provide an evaluation of disability ratings, as discussed in Peterson *et al* (1998). Since workers with a greater loss of ability to compete in the labor market are likely to have larger losses on average, then the relationship between ratings and losses provide *ex-post* validation for ratings. Ratings may then be considered more valid if higher ratings are associated with higher losses.

Peterson *et al* showed that while earnings losses for claims with disability ratings under 20 (approximately 60 percent of claims in 1993) were lower than for higher-rated claims, among these lower-rated claims, the disability ratings did not predict losses and were therefore not valid. The lowest rated claims (disability ratings under 5 percent) had losses that were no smaller and perhaps larger on average than higher rated claims. Since PPD benefits are set by the rating, this finding implied that the replacement rates for the lowest rated claims were very low—approximately 12 percent of earnings losses.⁴

It is not possible to exactly replicate the findings of Peterson *et al* using the self-insured data because disability ratings were typically missing in the data provided to RAND by the employers in our sample.⁵ We adopt an alternative approach in this paper. In particular, we use total indemnity (incurred) as a substitute for disability rating. In addition to permanent partial disability benefits, total indemnity includes temporary disability and vocational rehabilitation maintenance allowance. Since more serious permanent disabilities are also likely to have longer periods of temporary disability and are more likely to receive vocational rehabilitation, total indemnity is a good proxy for disability rating.⁶

Table 10 reports earnings losses and replacement rates by total indemnity quintile⁷ for injuries occurring at self-insured employers in 1993 and 1995. The results for 1993 are reported before tax at five years, and both 1993 and 1995 results are simulated to ten years and after-tax. The 1993 five-year before tax results are also summarized in Figure 16. For readers more comfortable with disability ratings, note that the median rating in the insured data associated with

Washington, 23 percent receive PPD benefits. See Biddle, Boden and Reville (2000) for a comparison of Washington, Wisconsin and California.

⁴ This finding requires careful interpretation. It does not imply that low-rated claims have the highest uncompensated wage losses. In fact, high-rated claims have both the highest replacement rate and the highest uncompensated wage losses.

⁵ Ratings were only present on approximately 25 percent of claims, and since they were concentrated at a few firms, it was not possible to generalize to the full sample of claims from this group.

⁶ For 1993 injuries, the correlation between disability rating and total indemnity incurred in the WCIRB data was 0.68. In Table A7, we report a cross-tabulation between quintile of disability rating and the quintile of indemnity.

⁷ Quintiles divide the sample into five equally sized groups by percentile. The first quintile is the 1-20 percentile. The second is the 21-40 percentile, with the third, fourth and fifth similarly defined.

the first quintile of total indemnity in 1993 is 5. The second is 10, the third is 17, the fourth is 25 and the fifth is 45.

Table 10
Earnings Losses and Replacement by Indemnity Quintile, Self-Insured Employers, 1993 and 1995

Year of Injury	Indemnity Percentile	Earnings Losses (\$)	Potential Uninjured Earnings (\$)	Total Indemnity (\$)	Prop. Loss	Repl. Rate
Before-Tax, 5 Years of Losses						
93	0-20	14,621	167,467	2,159	0.087	0.148
	21-40	11,076	172,000	6,787	0.064	0.613
	41-60	29,829	172,562	13,909	0.173	0.466
	61-80	48,958	163,812	27,013	0.299	0.552
	81-100	93,098	168,549	45,482	0.552	0.489
Simulated After-Tax, 10 Years of Losses						
93	0-20	18,730	230,031	2,159	0.081	0.115
	21-40	13,938	236,121	6,787	0.059	0.487
	41-60	40,329	238,364	13,909	0.169	0.345
	61-80	65,290	225,932	27,013	0.289	0.414
	81-100	128,339	235,186	73,294	0.546	0.571
Simulated After-Tax, 10 Years of Losses						
95	0-20	12,146	242,148	1,676	0.050	0.138
	21-40	15,453	245,715	6,061	0.063	0.392
	41-60	34,406	247,149	12,984	0.139	0.377
	61-80	58,438	236,377	25,512	0.247	0.437
	81-100	126,514	245,680	68,650	0.515	0.543

In Table 10, the largest losses are in the highest (fifth) quintile. Total losses for claimants in the fifth quintile are \$93,098, a proportional earnings loss of 55 percent. The lowest losses are in the second quintile, at \$11,076, with somewhat higher losses observed in the lowest quintile, \$14,621. In 1995, the highest losses are in the fifth quintile and the lowest losses are in the first quintile. Overall, the relationship between total indemnity and total losses suggests that, except perhaps for the lowest two quintiles, benefit allocation at the self-insured (presumably determined by ratings) is valid.

A related question is the equity of benefits across indemnity categories. This equity can be measured by replacement rates or by uncompensated wage loss. Berkowitz and Burton (1986) argued that equity requires that replacement rates either increase or decrease consistently with

disability.⁸ A decision to compensate a greater fraction of losses for workers with greater disability would lead to consistently increasing replacement rates. At both five or ten years, and in 1993 or 1995, the evidence in Table 10 suggests that this equity condition is violated. The second quintile often has replacement rates higher than either the first or third quintile. This result is different than the result in Peterson *et al*, where the lower-rated claims consistently had lower replacement rates than the higher-rated claims.

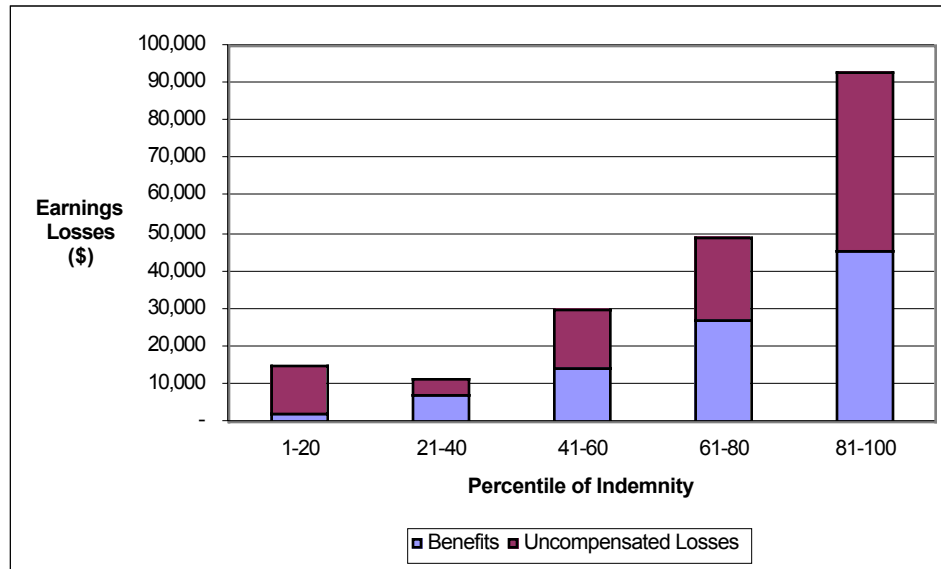


Figure 16—Earnings Losses at Five Years by Indemnity Quintile, Self-Insured Firms, 1993 Injuries

As in Peterson *et al*, the lowest indemnity quintile has the lowest replacement rate. This is readily visible in Figure 16 and Table 10 where the fraction of total losses that is uncompensated is largest for the lowest quintile. Out of total before-tax losses of \$14,621 in percentile 0-20, only \$2,159 is received in benefits, resulting in a replacement rate under 15 percent. For this lowest indemnity category, the replacement rates are lowest for 1995 as well.

As noted earlier, differences in replacement rates may not be the ideal way to judge whether any category of claimants is undercompensated. For instance, if policymakers want to compensate a greater fraction of the losses of the most disabled, then the lowest indemnity category will have a lower replacement rate by design. An alternative test is to examine uncompensated wage losses. The unshaded lower portion of each wage loss bar in Figure 16 is

⁸ This is an example of *vertical equity*. Berkowitz and Burton (1987) suggested another measure of equity which they referred to as *horizontal equity*: Similar workers should be compensated equally. An example would be that a worker with injuries that on average lead to equal losses should get equal benefits. We will be examining this issue in future work.

the average total benefits received by five years, and the upper shaded portion is the uncompensated wage loss. In addition to having the highest losses, the fifth quintile also has the highest uncompensated wage losses. While receiving benefits of over \$45,000 over the five years after injury, losses are almost twice that amount. Therefore, uncompensated loss is almost \$50,000. By ten years, simulated uncompensated losses before-tax is over \$100,000. Uncompensated losses for the lowest quintile are higher in both 1993 and 1995 than the second quintile, but lower than the three highest quintiles.

Table 11
Earnings Losses and Replacement by Indemnity Quintile, Insured

Year of Injury	Indemnity Percentile	Earnings Losses (\$)	Potential Uninjured Earnings (\$)	Total Indemnity (\$)	Prop. Loss	Repl. Rate
Before-Tax, 5 Years of Losses						
93	0-20	14,654	97,817	1,696	0.150	0.116
	21-40	17,818	99,897	5,689	0.178	0.319
	41-60	26,320	103,452	12,392	0.254	0.471
	61-80	37,043	102,224	24,588	0.362	0.664
	81-100	69,938	113,881	43,638	0.614	0.624
Simulated After-Tax, 10 Years of Losses						
93	0-20	18,593	143,117	1,696	0.130	0.091
	21-40	22,427	144,034	5,689	0.156	0.254
	41-60	32,866	149,934	12,392	0.219	0.377
	61-80	42,899	148,258	24,588	0.289	0.573
	81-100	87,378	163,396	61,622	0.535	0.705
Simulated After-Tax, 10 Years of Losses						
95	0-20	18,307	155,570	1,994	0.118	0.109
	21-40	22,792	166,146	5,997	0.137	0.263
	41-60	34,355	163,733	12,997	0.210	0.378
	61-80	54,544	157,512	27,179	0.346	0.498
	81-100	103,242	176,233	62,647	0.586	0.607

Table 11 reports estimates by indemnity quintile for PPD claimants at insured firms in 1994. As in Peterson *et al* (1998), and as with the self-insured, replacement rates are lowest for the lowest quintile. Losses and uncompensated losses are highest for the highest quintile. Comparing the self-insured and the insured, proportional wage losses are lower in every quintile at the self-insured, suggesting that return to work is better at the self-insured for all levels of severity. However, while replacement rates are higher for lower-indemnity claims at the self-insured, replacement rates are higher for higher-indemnity claims at the insured. These results suggest that the lower average replacement rate overall at the self-insured is driven by lower replacement among the most disabled. This issue is explored further in the next section.